USER'S MANUAL

Multimeter
Auto ranging Pocket DMM

DMR-602

CIRCUIT-TEST ELECTRONICS
www.circuittest.com

Features

- 3-3/4 digit 4000 count LCD display
- Built-in non-contact AC voltage detector
- Flashlight
- Double Molded housing
- CATIV 600V
- 200mA/500V Resettable Fused current inputs and
- Overload protection on all ranges
- Autoranging with auto power off

Safety

International Safety Symbols

This symbol, adjacent to another symbol or terminal, indicates the user must refer to the manual for further information.

This symbol, adjacent to a terminal, indicates that, under normal use, hazardous voltages may be present.

Double insulation

Safety Precautions

This meter has been designed for safe use, but must be operated with caution. The rules listed below must be carefully followed for safe operation.

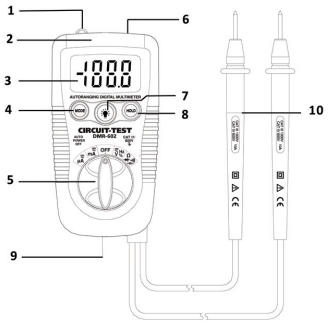
1. Do not exceed the maximum rated input limits.

Input Limits	
Function	**Maximum Input**
V DC or V AC	600V DC/AC
μA AC/DC	200mA/500V (fast acting resettable fuse)
Resistance, Diode & Continuity Test	600V DC/AC

2. **USE EXTREME CAUTION** when working with voltages greater than 25VAC rms or 35VDC. These voltages are considered a shock hazard.
3. **DO NOT** measure voltage if the voltage on the "COM" input jack exceeds 600V above earth ground.
4. **ALWAYS** discharge capacitors and remove power from the device under test before performing Diode, Resistance or Continuity tests.
5. **NEVER** connect the meter leads across a voltage source when the function switch is in the current, resistance or diode mode.
6. **ALWAYS** turn off the meter and disconnect the test leads from the circuit before opening the cover to replace battery.
7. **ONLY** operate the meter with the battery cover fastened securely.

Meter Description

1. Non-contact AC voltage detector probe tip
2. Non-contact AC voltage indicator light
3. 3 3/4 Digit (4000 count)
4. MODE button
5. Function switch
6. Flashlight
7. Flashlight button
8. Hz/%Duty Cycle button
9. Battery Cover
10. Test leads



Specifications

Function	Range & Resolution	Accuracy
DC Voltage	400mV, 4.000V,40.00V	±(0.8% rdg + 2digits)
	400.0V, 600V	±(1.0% rdg + 2digits)
AC Voltage 50-60Hz	4.000V, 40.00V	±(1.0% rdg + 5digits)
	400.0V, 600V	±(1.5% rdg + 5digits)
DC Current	400.0μA, 4000μA	±(2.0% rdg + 2digits)
	40.00mA, 200.0mA	
AC Current 50-60Hz	400.0μA, 4000μA	±(2.5% rdg + 5digits)
	40.00mA, 200.0mA	
Resistance	400.0Ω	±(0.8% rdg + 5digits)
	4.000kΩ,	±(1.2% rdg + 5digits)
	40.00kΩ, 400.0kΩ	±(0.8% rdg + 2digits)
	4.000MΩ	±(0.3% rdg + 5digits)
	40.00MΩ	±(5.0% rdg + 5digits)
Capacitance	4.000nF	±(5.0% rdg + 0.6nF)
	40.00nF	±(3.5% rdg + 30digits)
	400.0nF, 4.000μF	±(3.0% rdg + 20digits)
	40.00μF, 200.0μF	±(5.0% rdg + 30digits)
Frequency	9.999Hz, 99.999Hz, 999.9Hz, 9.999kHz,	±(1.0% rdg + 2digits)
Duty Cycle	0.5-99%	±(2.0% rdg + 5digits)

Note: Accuracy specifications consist of two elements:
• (% reading) This is the accuracy of the measurement circuit
• (+ digits) This is the accuracy of the analog to digital converter
Accuracy is stated at 65ºF to 83ºF (18ºC to 28ºC) < 75% RH

Non-Contact Voltage	100 to 600VAC; 50/60Hz
Diode Test	Test current 1mA, open circuit voltage of 1.5V DC typical
Continuity Check	Audible signal if the resistance is <100Ω
Display	4000 count 3-3/4 digit LCD
Over range indication	"OL" is displayed
Polarity	Automatic; (-) sign for negative polarity.
Low Battery Indication	symbol indicates low battery condition.
Input Impedance	>7.5MΩ (VDC & VAC)
AC Response	Average responding
ACV Bandwidth	50Hz to 60Hz
Auto Power Off	15 minutes (approximately)
Fuse	mA, μA ranges; 0.2A/500V fast acting (resettable fuse)
Batteries	Two 1.5V AAA
Operating Temperature	32ºF to 104ºF (0ºC to 40ºC)
Storage Temperature	14ºF to 122ºF (-10ºC to 50ºC)
Weight	0.319 lb (145g)
Size	104x55x32.5mm (4.09"x2.1"x1.2")
Safety / Approvals	This meter is UL and CUL approved and conforms to IEC61010-1 for Overvoltage Category CAT IV 600V.

Operating Instructions

WARNING: Risk of electrocution. High-voltage circuits, both AC and DC, are very dangerous and should be measured with great care.

1. ALWAYS turn the function switch to the OFF position when the meter is not in use. This meter automatically shuts OFF after 15 minutes of inactivity.
2. If "OL" appears in the display during a measurement, the value exceeds the range you have selected. Change to a higher range.

NOTE: On some low AC and DC voltage ranges, with the test leads not connected to a device, the display may show a random, changing reading. This is normal and is caused by the high-input sensitivity. The reading will stabilize and give a proper measurement when connected to a circuit.

AC/DC VOLTAGE MEASUREMENTS

CAUTION: Do not measure AC/ DC voltages if a motor on the circuit is being switched ON or OFF. Large voltage surges may occur that can damage the meter.

1. Set the function switch to the V position.
2. Press the MODE button to indicate "**DC**" or "**AC**" on the display.
3. Touch the black test probe tip to the negative side of the circuit. Touch the red test probe tip to the positive side of the circuit.
4. Read the voltage in the display.

AC/DC CURRENT MEASUREMENTS

1. For current measurements up to 4000**µA** C/DC, set the function switch to the **µA** position.
2. For current measurements up to 200**mA** AC/DC, set the function switch to the **mA** position.
3. Press the MODE button to indicate "**AC**" or "**DC**" on the display.
4. Remove power from the circuit under test, then open up the circuit at the point where you wish to measure current.
5. Touch the black test probe tip to the negative side of the circuit. Touch the red test probe tip to the positive side of the circuit.
6. Apply power to the circuit and read the current in the display.

RESISTANCE MEASUREMENTS

WARNING: To avoid electric shock, disconnect power to the unit under test and discharge all capacitors before taking any resistance measurements. Remove the batteries and unplug the line cords.

1. Set the function switch to the **Ω** position.
2. Press the MODE button to indicate **Ω** on the display.
3. Touch the test probe tips across the circuit or part under test. It is best to disconnect one side of the part under test so the rest of the circuit will not interfere with the resistance reading.
4. Read the resistance in the display.

CONTINUITY CHECK

WARNING: To avoid electric shock, never measure continuity on circuits or wires that have voltage on them.

1. Set the function switch to the **Ω** position.
2. Press the MODE button to indicate on the display
3. Touch the test probe tips to the circuit or wire you wish to check.
4. If the resistance is less than approximately 100Ω, the audible signal will sound. If the circuit is open, the display will indicate "OL".

DIODE TEST

1. Set the function switch to the **Ω** position.
2. Press the MODE button to indicate on the display
3. Touch the test probes to the diode under test. Forward voltage will typically indicate 0.400 to 0.700V. Reverse voltage will indicate "OL". Shorted devices will indicate near 0V and an open device will indicate "OL" in both polarities

CAPACITANCE MEASUREMENTS

WARNING: To avoid electric shock, disconnect power to the unit under test and discharge all capacitors before taking any capacitance measurements. Remove the batteries and unplug the line cords.

1. Set the function switch to the **Ω** position.
2. Press the MODE button to indicate **nF** on the display.
3. Touch the test leads to the capacitor to be tested.
4. Read the capacitance value on the display.

FREQUENCY/DUTY CYCLE MEASUREMENTS

1. Set the function switch to the V **/HZ/%** position.
2. Press the **Hz/%** button to display **Hz** on the display.
3. Touch the test probe tips to the circuit under test.
4. Read the frequency on the display.
5. Press the **Hz/%** button again to display **%** on the display.
6. Touch the test probe tips to the circuit under test.
7. Read the % duty cycle on the display.

NON-CONTACT AC VOLTAGE MEASUREMENT

WARNING: Risk of electrocution. Before use, always test the Voltage Detector on a known live circuit to verify proper operation.

The Voltage Detector works with the function switch in any position including OFF.

1. Bring the probe tip next to the hot conductor or insert into the hot side of the electrical outlet.
2. If AC voltage is present, the detector light will illuminate.

NOTE: The conductors in electrical cord sets are often twisted. For best results, rub the probe tip along a length of the cord to assure placing the tip in close proximity to the live conductor.

NOTE: The detector is designed with high sensitivity. Static electricity or other sources of energy may randomly trip the sensor. This is normal operation

FLASHLIGHT

Press and hold the button to turn the flashlight on. Release the button to turn the flashlight off.

AUTO POWER OFF

The auto off feature will turn the meter off after 15 minutes.

Maintenance

REPLACING THE BATTERY

WARNING: To avoid electric shock, disconnect the test leads from any source of voltage before removing the battery door.

1. will appear in the display when the battery drops below the operating voltage and requires replacing.
2. Turn off the meter.
3. Remove the screw securing the battery cover at the bottom of the meter.
4. Replace the batteries observing the correct polarity.
5. Replace the cover and secure the screw.

WARNING: To avoid electric shock, do not operate your meter until the battery cover is in place and fastened securely.

RESETTABLE FUSE

The resettable fuse (200mA/500V) will open if the current limits of the meter are exceeded and the fuse will automatically reset itself when the suspected current is removed from the meter's input.

LIMITED WARRANTY

Circuit-Test Electronics warrants to the original purchaser that this product be free of defect in material or workmanship for a period of 2 years from the date of purchase.

Any product which has been subjected to misuse or accidental damage is excluded from the warranty. Except as stated above, Circuit-Test Electronics makes no promises or warranties either expressed or implied including warranties of merchantability or the fitness for any particular purpose.